

ACCESSION NR: AP4037584

S/0056/64/046/005/1715/1721

AUTHORS: Kopylov, G. I.; Kulyukina, L. A.; Polubarinov, I. V.

TITLE: Photoproduction of electron and muon pairs on electrons

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1715-1721

TOPIC TAGS: photoproduction, electron, muon, pair production, photon, photon energy

ABSTRACT: The random star method described elsewhere by two of the authors (Kopylov and Polubarinov, Preprint OIYaI D-821, 1961) is used to calculate the photoproduction of e^+e^- and $\mu^+\mu^-$ pairs on electrons, under conditions when none of the third-order diagrams contributing to the photoproduction process $\gamma e^- \rightarrow e^-e^-e^+$ can be neglected. The calculations were made in the Born approximation, using a desk calculator, without any neglect, for the intermediate photon energy range, (up to $60m_e$) for which no approximate formulae are

Card 1/2

ACCESSION NR: AP4042569

S/0056/64/046/006/2063/2069

AUTHOR: Kopylov, G. I.

TITLE: On some properties of cascade decay

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 2063-2069

TOPIC TAGS: decay scheme, cascade, resonance absorption, mass spectrum, particle interaction, particle production

ABSTRACT: The case is considered of a resonant state decaying in accordance with the scheme $A \rightarrow 1 + A \rightarrow 1 + 2 + 3$, with particle 3 being undetectable. The aim of the study is to ascertain kinematic reasons for the appearance of peaks in the effective-mass distribution. It is shown first that if a system of three particles with definite effective mass decays in accordance with the scheme $A \rightarrow 1 + 2 + 3$, then a "false resonance" peak can appear in the distribution with respect to the effective mass m_4 of particles 1 and 2, which

Card 1/3

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

Song lyrics of carols: J. M. ...
No. 6: 2053-2069 Is '64.
... file.

70.6:2062-2069 Is 1640

1. Chiropractic Institute of America

...and the

BEIYAKOV, V.A.; VEKSLER, V.I.; VIRYASOV, N.M.; KLADNITSKAYA, Ye.N.;
KOPYLOV, G.I.; MIKHUL, A. [Michul, A.]; PENEV, V.N.; SOKOLOVA,
Ye.S.; SOLOV'YEV, M.I.

η -Meson resonances generated simultaneously with strange
particles in π -p-interactions at 7.5 Gev./c. Zhur. eksp. i teor.
fiz. 46 no. 6: 1967-1978 Je '64.

1. Ob"yedinennyy institut yadernykh issledovaniy. 2. So-
trudnik Instituta atomnoy fiziki Rumynskoy Akademii nauk,
Bukharest (for Mikhul).
(MIRA 17:10)

ACC NR: AP6014814

SOURCE CODE: UR/0367/65/001/002/0330/0350

AUTHOR: Belyakov, V. A.; Veksler, V. I.; Viryasov, N. M.; Kladnitskaya, Ye. N.; Kladnitskaya, E. N.; Kopylov, G. I.; Penev, V. N.; Solov'yev, M. I.; Solovyev, M. I.

ORG: Joint Institute of Nuclear Research (Ob'yedinenyy institut yadernykh issledovaniy)

TITLE: Baryon resonances in π -p-interactions at 7.5 GEV with formation of strange particles

SOURCE: Yadernaya fizika, v. 1, no. 2, 1965, 338-350

TOPIC TAGS: baryon, meson, particle interaction, strange particle, hyperon, particle cross section

ABSTRACT: The formation and properties of resonances decaying into Λ -hyperons and π -mesons were studied. Data are given on the formation cross sections for Y^+ (1385) and Y^+ (1660)-hyperons in π -p-interactions at 7.5 GEV/c. The properties and formation characteristics of Y^+ (1385)-hyperons and their decay products were investigated. The maximum in the mass spectrum $M_{\Lambda\pi^+\pi^-}$ at the value 1770 MEV was discussed. The authors thank Professor M. I. Podgoretskiy and Professor I. V. Chuvilo for their interest in the work and their discussions; A. Mikhul, Nugen Din Ty, A. A. Kuznetsov, Ye. S. Sokolova, Du Yuan'-tsay, Van Yun-ohan and Kim Khi In for taking part in the first stage of the work. Further thanks is rendered N. F. Markov and V. Ye. Komolov, co-workers at the Computer Center, for carrying out the calculations and the group

Card 1/2

L 23730-66

ACC NR: AF6014814

of laboratory workers for the measurements. The authors also thank V. G. Grishin, A. V. Nikitin, E. G. Bubelev, and I. Kurelar for discussing the various problems of this work. Orig. art. has: 9 figures, 2 formulas, and 4 tables. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 20 / SUM DATE: 01Sep64 / ORIG REF: 011 / OTH REF: 009

Cord 2/2 *du*

L 23731-66 EWT(m)/T

ACC NR: AP6014815

SOURCE CODE: UR/0367/65/001/002/0351/0365

AUTHOR: Belyakov, V. A.; Veksler, V. I.; Viryasov, N. M.; Kladnitskaya, Ye. N.;
Kladnitskaya, E. N.; Kopylov, G. I.; Penev, V. N.; Solov'yev, M. I.; Solovyev, M. I.

ORG: Joint Institute of Nuclear Research (Ob'yedinenyy institut yadernykh issledovaniy)

TITLE: Meson resonances in π -p-interactions at 7.5 GEV with formation of strange particles

SOURCE: Yadernaya fizika, v. 1, no. 2, 1965, 351-365

TOPIC TAGS: π meson, strange particle, particle interaction, K meson, mass spectrum

ABSTRACT: Resonances decaying into K^0 (\bar{K}^0 , K^+) and π -mesons are investigated. Cross sections are given for the formation of K^* (888) and k (730) mesons in π -p-interactions at 7.5 GEV/c in events with KK pairs, and the contribution (in %) of k^0 , K^{*0} -mesons in events with ΛK^+ pairs is evaluated. Properties and formation characteristics of K^{*0} -mesons are described. Mass-spectra of the $K2 \pi$ and $K3 \pi$ systems are investigated. The possibility of the formation of a new resonance $U = K^0 + \pi^+ + \pi^- + \pi^0$ with mass 1660 MEV is indicated. An attempt is made to determine its quantum numbers. Proofs are given for the production of a resonance with mass 1050 MEV, decaying into three π -mesons ($\pi^+ \pi^- \pi^0$), which can be identified as the A_1 -meson.

Cord 1/2

ACC NR: AP7008884

AUTHOR: Kopylov, G. I.

SOURCE CODE: UR/0367/66/004/COL/0801/0806

ORG: Joint Institute for Nuclear Research (Ob'yedinennyy institut yadernykh issledovaniy)

TITLE: Forbidden configurations in three-photon systems

SOURCE: Yadernaya fizika, v. 4, no. 4, 1966, 801-806

TOPIC TAGS: photon, matrix element

SUB CODE: 20

ABSTRACT: The effective matrix elements for the three-photon decays of particles with spin 0 and 1 are listed. It is proved in general that collinear configurations and configurations with monoenergetic photons are forbidden for spin 0, contrary to spin 1 and 2. Characteristic distributions of the photon energies are given. The author thanks B. N. Baluyev, V. I. Ogiyevetskoy, and I. V. Polubarinov for valuable advice, and also L. B. Okun' and A. D. Dolgov, who pointed out a mistake in the original version of the article. Orig. art. has: 3 figures and 7 formulas. [Based on author's Eng. abst.] [JPRS: 39,658]

Card 1/1

UDC: none

AUTHOR
TITLE

PERIODICAL

ABSTRACT

KOPYLOV, G.N.

A Sound Flow round a Wedge at a certain Angle of Application (Zvukovoy potok okolo klina pod nekotorym uglom ataki).

Received 3/1957

PA - 2205

Reviewed 5/1957

Problem. The present paper deals with a flow round a circular profile by a plane-parallel sound flow at a small angle of application. The profile is assumed to have 2 symmetry axes and to be characterized by the following parameters, θ_0 - half angular aperture of the front part of the wedge, b - the chord of the profile, α - angle of application. θ_0 and α are here assumed to be small. At $\alpha = 0$ is the critical point of the flow at the front end of the profile and at $\alpha > 0$ it shifts to the lower front declivity. Therefore, a small supersonic zone must form on the nose of the profile if α is small, which zone increases with increasing α . With $\alpha = \alpha_1$ the supersonic zone takes up the entire front declivity. As α_1 depends essentially on θ_0 , the author here puts $\alpha^0 = \alpha/\theta_0$. The following denotations are here used. On profile 1 the first, second, and third type of flow takes place if the following is true: (1) $0 \leq \alpha^0 < \alpha_1^0$, (2) $\alpha_1^0 \leq \alpha^0 \leq \alpha_2^0$, (3) $\alpha_2^0 < \alpha^0 < \infty$. Here it applies that $\alpha_1^0 = \alpha_1/\theta_0$, and α_2 denotes that angle of application of the profile at which the unlimited supersonic zone on the lower rear declivity goes over into a local supersonic zone in the neighbourhood of the lower end of the profile. The description given here of the flow round the wedge is confirmed by experiment, which is shown here on the basis of diagrams.

Card 1/2

AUTHOR: Kopylov, G.N. (Leningrad)

40-22-1-13/15

TITLE: ~~Aerodynamic Characteristics~~ of a Thin Wedge-Shaped Profile in
Sonic Flow (Aerodinamicheskiye kharakteristiki tonkogo kli-
novidnogo profil'ya v zvukovom potoke)

PERIODICAL: Prikladnaya Matematika i Mekhanika, 1958, Vol 22, Nr 1,
pp 133-138 (USSR)

ABSTRACT: For the calculation of the aerodynamic characteristics of a thin, wedge-shaped profile under a small angle of incidence it is possible to continue the solution beyond the characteristic limits for the case that the solution in the subsonic range is known. One can apply the well-known characteristics method in the supersonic range. However, under the conditions of an afflux in the direct near of the velocity of sound the application of analytic methods can be more suitable. In his paper the author shows that the continuation of the solution beyond the limit characteristics can start from the solution of a certain boundary problem for the Euler-Darboux equation. As the result of this procedure the whole pressure distribution over the wedge-shaped profile can be given as a function of the angle of incidence, and the limits of applicability of

Card 1/2

Aerodynamic Characteristics of a Thin Wedge-Shaped Profile
in Sonic Flow

40-22-1-13/15

the method can be determined. There are 5 figures, and 6 references, 4 of which are Soviet, and 2 American.

SUBMITTED: September 17, 1956

Card 2/2

AUTHOR: Kopylov, G.N. (Leningrad) SOV/40-22-3-14/21

TITLE: ~~On the Similarity~~ of Plane Supersonic Flows (O podobii trans-zvukovykh ploskikh potokov)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 3, pp 391 - 395 (USSR)

ABSTRACT: Several authors developed approximation methods for the calculation of gas flows near the sound velocity. Here from the simplified equations of motion a criterion of similitude is generally derived, with the aid of which different boundary value problems with flows were calculated in which shock waves occur. If the results of such calculations are compared with experiments, then a systematic deviation of the coefficient of compressive strength, however, is stated, if the Mach number of the arriving flow considerably differs from 1. This fact caused Spreiter [Ref 5] to apply another kind of simplification of the starting equation so that he obtained a new criterion of similarity. The criterion of similarity, however, has the error that the influence of the terms neglected in the equations is rather difficult to estimate. The author tries to avoid this disadvantage by

Card 1/2

On the Similarity of Plane Supersonic Flows

SOV/40-22-3-14/21

simplifying the starting equation in another way. He supposes that the Mach number of the arriving flow only differs little from 1. The velocities of the flow around the profile are assumed to differ little from the velocities of the arriving flow, and this with respect to the direction as well as to the magnitude. Under these assumptions a certain criterion of similarity is obtained, by the application of which it is possible to realize more exact results in the calculation of such flows for which the velocity passes through the sound limit.

By a special example of the flow around a wedge-shaped profile the results according to the methods of different authors are compared with the new method.

There are 5 figures, and 7 references, 2 of which are Soviet, and 5 English.

SUBMITTED: July 3, 1957

Card 2/2

KOPYLOV, G.N.

Laminar flow of a charged liquid in a plane tube under the action
of an external electrostatic field. Zhur. tekhn. fiz. 33 no.11:
1290-1300 N '63. (MIRA 16:12)

L 2459-66

ACCESSION NR: AP5020716

2

of motion are Reynolds' equations with additional terms representing the electric force. These equations are specialized to the case of steady flow between infinite parallel nonconducting planes and are solved separately for the laminar boundary layers and the turbulent core. Prandtl's expression for the turbulent stress in terms of a mixing length is employed, the mixing length is assumed to vary linearly with the distance from the wall, and the solution for the turbulent core is effected by a successive approximation method that depends on the electric field being small. It is found that, in spite of turbulent diffusion, the effect of the electric field is less in turbulent flow than in laminar flow, owing to concentration of the charge in thin regions near the walls within the laminar boundary layers. Numerical values are calculated for the case of air, and it is concluded that the "electronic" method for controlling the laminar boundary layer proposed by A.M. Mikhitarian and S.D. Labinov (Trudy vsesoyuznogo nauchno-tekhnicheskogo soveshchaniya po vodozabornym sooruzheniyam i uslovnyam protsessam, 2, p.54, Tbilisi, 1960) can be effective only at velocities below a few meters per second. Orig. art. has: 68 formulas, 2 figures, and 1 table.

ASSOCIATION: Vyssheye aviatsionnoye ychilishche, Leningrad (Aviation college)

Card 2/3

L 2459-66

ACCESSION NR: AP5020716

SUBMITTED: 21Oct64

NR REF SOV: 004

ENCL: 00

SUB CODE: ME

OTHER: 000

BVK
Card 3/3

USTINOV, N.F., inzh.; KOPYLOV, G.P., inzh.

Erection of a 55 meter span structure by a cantilever crane.
Transp.stroi. 15 no.10:15-16 0 '65.

(MIRA 18:12)

KOPYLOV, G.P., inzh.

Erecting large spans with joints fastened by high-strength bolts. Transp. stroi. 15 no.1:11-15 Ja '65.

(MIRA 18:3)

KOPYLOV, G.Ye., uchitel'.

Certain practices in organizing the work of students on the school
plot. Biol. v shkole no.2:45-46 Mr-Apr '58. (MIRA 11:4)

1. Khrenovskaya srednyaya shkola No.1, Khrenovskogo rayona Voronezhskoy.
oblasti.
(Agriculture--Study and teaching)

KOPYLOV, G.Ye.

How we teach fruit growing to tenth graders. Politekh. obuch. no. 4;
33-36 Ap '58. (MIRA 11:3)

(Fruit culture)

KOPYLOV, G.Ye.

Organizing students' work on a school training farm. Politekh.obuch.
no.2:27-31 P '59. (MIRA 12:3)

1. Srednyaya shkola No.1 Khrenovskogo rayona Voronezhskoy oblasti.
(Khrenovoye--Agriculture--Study and teaching)
(Field work (Educational method))

KOPYLOV, G.Ye., uchitel'

"Formation of skills and practices in students of grades 5 and 6 on the school experiment plot"; manual for teachers of rural schools by A.M.Unkovskii. Reviewed by G.Ye.Kopylov. Biol.v shkole no.4:90-91 J1-Ag '60. (MIRA 13:7)

1. Khrenovskaya srednyaya shkola No.1, Khrenovskogo rayona, Voronezhskoy oblasti.
(Agriculture--Study and teaching) (Unkovskii, A.M.)

USSR / Forest Science. General Problems.

K-1

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77478

Author : Kopylov, I.

Inst : Not given

Title : Resources of the Cedar Taiga

Orig Pub : S. kh. Sibiri, 1958, No 2, 92-95

Abstract : No abstract given

Card 1/1

~~KOPYLOV~~
APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R000824520012-

Induction heating of metals. NT0 2 no.6:19 Je '60. (MIRA 14:2)

1. Kompessornyy zavod, g. Penza.
(Penza—Induction heating)

KOPYLOV, I., mayor

He helped the operator. Starsh.-serzh. no.4:5 Ap '62.

(Radar, Military)

(MIRA 15:4)

KOPYLOV, I.

Finance

Finance employees of enterprises in the struggle for a high economic index. Den. 1 kred.
11 no. 5, '52.

Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

KOPYLOV, I.

Work in the new way. Den. 1 kred. 12 no.5:26-29 N'54. (MLBA 8:2)
(Sverdlovsk--Bank and banking)(Sverdlovsk--Industrial
Management)

KOPYLOV, I.

The bank and the regional economic council. Den. 1 kred. 16 no.6:
46-48 Je '58. (MIRA 11:7)
(Sverdlovsk Province--Finance)

POZDNYAKOV, N.; DEDYAREV, A.; KOPYLOV, I.; KHOKHLOV, L.; ZIL'BERSHTEYN, M.

Our proposals. Den. 1 kred. 15 no.5:2-18 My '57. (MLBA 10:6)

1. Upravlyayushchiy Leningradskoy gorodskoy kontoroy Gosudarstvennogo banka (for Pozdnyakov). 2. Upravlyayushchiy Moskovskoy oblastnoy kontoroy Gosudarstvennogo banka (for Degtyarev). 3. Upravlyayushchiy Sverdlovskoy oblastnoy kontoroy Gosudarstvennogo banka (for Kopylov). 4. Latvinskaya respublikanskaya kontora Gosudarstvennogo banka (for Khokhlov and Zil'bershteyn).
(Banks and banking)

KOPYIOV, I., inzh.

Rolled parquet floors. 7.1. stroi. no.7:35 J1 '61. (MIRA 14:8)
(Parquet floors)

KOPYLOV, I.B., inzh.; ROTACH, V.Ya., kand. tekhn. nauk; SHCHERBOV, V.M., inzh.

Study of the pressure control systems of a block operating in a
frequency regulatory mode. Elek. sta. 35 no.7:46-51 J1 '64.
(MIRA 17:11)

KOPYLOV, I.B., inzh.

Effect of the regulatory capability of the boiler department
on the dynamics of a system for automatically controlling
frequency and active power. Trudy VZEI no.25:46-56 '64.
(MIRA 18:12)

KOPYLOV, I.F.

RT-1191 (Results obtained with the use of anthrax vaccine "S.T.I." during 1944-46) Itogi
Primeneniia sibirskazvenoi vaktsiny "STI" za 1944-46 gg.
VETERINARIJA, (5): 20-21, 1947.

KOPYLOV, I. I.

29771

Polyezashchitnyye Lyesnyye Polosy. V sb: Michurinskuyu Nauku- V S.-kh. Proizvodstvo.
Novosibirsk, 1949, S. 104-17

SO: LETOPIS' NO. 40

MYESTYERGAZI, M. M.

Zhivotnyy M. R Polyezashchitnykh Lyesivnykh Polos I bor'ba S vryedityelyami. - sm. 29749

SO: LETOPIS' NO. 40

KOPYLOV, I.K., inzh.

Commercial current induction furnace used for heat treatment of
copper pipe. Sudostroenie 24 no.5:55-58 My '58. (MIRA 11:6)
(Induction heating) (Pipe, Copper)

KOPYLOV, I.K., inzh.

Commercial frequency induction furnaces used for annealing
copper pipes before cold bending. Vest. mash. 38 no.9:34-35
S '58. (MIRA 11:10)
(Induction heating) (Pipe, Copper--Heat treatment)

KOTLIK, I. M.

Stars - Clusters

Absolute magnitudes of galactic clusters. Izv. Krym. astrofiz. obs. 8, 1952.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

KOPILOV, I. M.

Stars - New

Distances and luminosities of some novae. Izv. Krym. astrofiz. obser. 6, 1952.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

KOPYLOV, I.M.

Spectra and magnitudes of 731 weak stars of spectral classes O--B5
in the sector of the Milky Way centering at $\alpha = 1^h 25^m$, $\delta = +61^\circ 50'$ (1950).
Izv.Kryn.astrofiz.obser. 10:120-142 '55. (MLRA 7:5)
(Stars)

KOPYLOV, I.M.

Masses of novae shells. Izv.Kryn.astrofis.obser. 10:200-206 10 '53.
(NLRA 7:5)

(Stars, Nov) (Stars--Masses)

KOPYLOV, I. M.

USSR/Astronomy - Association

21 Jun 53

"O-Association in Scorpio and its Instability," I. M. Kopylov, Crimean Astrophys Observatory, Acad Sci USSR

DAN SSSR, Vol 90, No 6, pp 975-978

Discovery by V. A. Ambartsumyan of a new type of stellar association (V. A. Ambartsumyan, *Evolutsiya Zvezd i Astrofizika* / Evolution of Stars and Astrophysics, Yerevan 1947; *Astr Zhur* 26,3 (1949); *Izv AN SSSR, Ser Fiz* 14 (1950) stimulated study of spatial distribution, structure and kinematics of groups of hot stars. Author studies association of

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hot giants around open cluster NGC 6231 in Scorpio. Presented by Acad G. A. Shayn, 18 Apr 53.

KOPYLOV, I. M.

"1200-Millimeter Reflector of the Crimean Astrophysical Observatory,"
Izv. Krymsk.-Astrofiz. observ., 11, pp 44-58, 1954

The 1200-mm reflector started its operation in 1952. Its main parabolic mirror is silver coated and has a diameter of 1200 mm, the focal length is 8400 mm, and aperture ratio 1/7; the secondary hyperbolic mirror is aluminized and 380 mm in diameter. The reflector is supplied with two spectrographs. (RZhFiz, No 4, 1955)

SO: Sum, No 606, 5 Aug 55

KOPYLOV, I. M., MUSTEL, E. R., GALKIN, L. S.,

"Spectrophotometry of Gamma Cassiopeiae"

Izv. Krymsk. Astrofiz. Observ., 11, 1954, pp 59-73

A total of 12 spectrograms of gamma-Cas. obtained by means of the 1,200 mm reflectors of Crimea Observatory and the spectrograph constructed by V. A. Albitskiy are analyzed. Iron-arc spectrum was used for comparison. Microphotograms were obtained by self-recording Moll's microphotometer. Data are tabulated and compared with quantum number n of Balmer series. (RZhAstr, No 11, 1954)

SO: W-31187, 8 Mar 55

KOPYLOV, I.M.

Spectrum of Cassiopeiae in October 1953. Izv.Krym.astrofiz.
obser. 12:162-168 '54. (MIRA 13:4)
(Stars, Variable--Spectra)

KOPYLOV, I. M.

USSR/Astronomy - Variable stars

Card 1/1 Pub. 22 - 7/45

Authors : Konylov, I. M.

Title : About a dependence of the amplitude (magnitude variations) on the duration of a cycle of nova-like stars and of repeated novas.

Periodical : Dok. AN SSSR 99/4, 515-518, Dec 1, 1954

Abstract : A spectral study of the dependence of amplitudes on the duration of cycles (magnitude variations) of nova-like stars, Cygnus SS type, repeated novas and typical novas is described. Six references; 3 USSR (1934-1953). Tables; diagram.

Institution : The Crimean Astro-physical Observatory of the Acad. of Scs. of the USSR

Presented by: Academician G. A. Shayn, August 20, 1954

Kopylov, I.M.

USSR / Optics.

K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10324

Author : Kopylov, I.M.

Inst : Not Given

Title : Large Reflector of the Crimean Astrophysical Observatory.

Orig Pub: Priroda, 1955, No 4, 87-89

Abstract: The telescope is a Cassagren optical system, consisting of three glass mirrors: the principal mirror has a diameter of 1200 mm, a thickness of approximately 200 mm, a convex hyperbolic mirror, 380 mm in diameter, a flat rotary diagonal mirror of elliptical shape with axes 310 x 200 mm. The principal mirror is silvered, the remainder are aluminized. The equivalent focal distance is 24 meters. The scale in equivalent focus is 8.5"/mm. The tube of the telescope has a length of approximately 7 meters. The motion of the telescope and its focusing are effected with the aid of electric motors and manual drive. To drive the teles-

Card : 1/2

USSR / Optics

K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10324

cope when tracking there is provided an electric clockwork mechanism, placed in the column of the telescope. The telescope is equipped with two spectrographs. The first is a large one-prism glass spectrograph with three cameras, having the following focal distances: 230, 480 and 720 mm. This makes it possible to obtain spectra of stars 30, 60, and 10 mm long with corresponding dispersion at H_γ of 72.2, 35.6, and 24.4 A/mm. To photograph the comparison spectra, an iron arc is employed. The second is a quartz spectrograph and is used for the study of the ultraviolet portion of the spectrum and has a dispersion at H_γ of approximately 162 A/mm with a length of spectrum of 15 mm.

Card : 2/2

KOPYLOV, I.M.

Spatial distribution of novae. Izv.Krym.astrofiz.obser. 13:
23-31 '55. (MIRA 13:4)
(Stars, New--Distribution)

KOPYLOV, I.M.

Studying the structure of the white-blue sequence on the
spectrum-luminosity diagram. Izv.Krym.astrofiz.obser. 13:
46-75 '55. (MIRA 13:4)

(Stars, New)

KOPYLOV, I.M.

Comparing morphological characteristics and spatial distribution of novae and supernovae. Izv.Krym.astrofiz.obser. 15:140-146 '55. (MIRA 13:4)

(Stars, New)

KOPYLOV, I.M.

Spectrum-absolute magnitude diagrams for O-associations
and absolute magnitudes of O and B-type stars. Izv.Kryn.
astrofiz.obser. 15:153-159 '55. (MIRA 13:4)
(Stars--Magnitudes)

KOPYLOV, I.M.; KUMAYGORODSKAYA, R.N.

Parameters of galactic subsystems and absolute magnitudes of
long-period Cepheids. Izv.Krym.astrofiz.obser. 15:169-189
'55. (MIRA 13:4)

(Galaxies) (Cepheids)

KOPYLOV, I.M.; BOYARCHUK, A.A.

Spectrum of γ Cassiopeiae in August-September 1954. Izv.
Kryn.astrofiz.obser. 15:190-194 '55. (MIRA 13:4)
(Stars, Variable--Spectra)

Kopylov I. I.

USSR/ Astronomy - New stars

Card 1/1 Pub. 8 - 7/13

Authors : Kopylov, I. M.

Title : Statistical study of certain morphological peculiarities of new stars

Periodical : Astron. zhur. 32/1. 48-60, Jan-Feb 1955

Abstract : A statistical study of the morphological peculiarities of new stars is outlined. The peculiarities mentioned are as follows: 1. the distribution of new stars occurs in accordance with the amplitude of their brightness variation (between maximum and minimum, around an average brightness), and 2. two regularities in the curves representing the manner of new stars' brightness, change after the maximum. Thirteen references: 6 USSR and 7 USA (1929-1954). Graphs; tables; diagrams.

Institution : The Acad. of Scs. of the USSR, The Crimean Astrophysical Observatory

Submitted : July 29, 1954

KOPYLOV, I.M.

Stark effect in atmospheres of O5-O8-type stars. Part 1.
Izv.Krym.astrofiz.obser. 16:129-142 '56. (MIRA 13:4)
(Stars--Spectra)

KOPYLOV, I.M.

Normal color indices of O, B., and A stars. Izv. Krym. astrofiz.
observ. 18:41-54 '58. (MIRA 13:4)
(Stars--Color)

S/035/59/000/003/012/039
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, No. 3,
p. 33, # 1911

AUTHOR: Kopylov, I. M.

TITLE: Equivalent Widths of Absorption Lines in Spectra of 109¹² Stars 05-B7

PERIODICAL: Izv. Krymsk. astrofiz. observ., 1958, Vol. 20, pp. 123-155
(English summary)


TEXT: Equivalent widths of all absorption lines of H, HeI, HeII and most intensive lines of other elements: OIII, OII, SiIV, SiIII, SiII, NIII, NII, CIII, CII, MgII, CaII in the spectral range $\lambda\lambda$ 3700-5000 were determined for 109 stars of spectral classes 05-B7. Spectrograms with dispersion 75 Å/mm at H_γ were obtained with the large spectrograph of the 1220-mm reflector at the Krymskaya astrofizicheskaya observatoriya (Crimean Astrophysical Observatory). Altogether 760 spectrograms were selected and processed, on an average 7 spectrograms for each star. The plates were calibrated by means of a stepped slit on the same spectrograph. All the spectrograms were measured on a self-recording

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S/035/59/000/003/012/039
A001/A001

Equivalent Widths of Absorption Lines in Spectra of 109 Stars 05-B7

microphotometer of the Moll type. The record diagrams were processed in the usual way. The equivalent width of each absorption line was found from 3-4 measurements, on an average. Altogether about 12,000 individual determinations of W_λ were carried out. The mean probable error of one determination varies from $\sim 20\%$ for $W_\lambda > 0.5 \text{ \AA}$ to $\sim 4.5\%$ for $W_\lambda > 8.0 \text{ \AA}$. The data on the obtained mean equivalent absorption lines are tabulated. They are compared with the most extensive series of observations, in particular with the Williams series (1936). Systematic differences in W_λ discovered between various series proved to be independent of the value of dispersion used, they were due to other causes, in particular processing methods. The mean system of equivalent line widths was derived as a result of comparing all series of equivalent absorption line widths in spectra of 05-B7 stars (about 20 series) available in literature; this system is then adopted as a "standard" one (it may prove to be not the closest to the true one). The results of the comparison conducted show that spectrograms of stars with dispersions of the order of 30-70 \AA/mm can be successfully used for determining equivalent absorption line widths with an accuracy quite sufficient for the broad range of astrophysical problems. The equivalent absorption line



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S/035/59/000/003/012/039
A001/A001

Equivalent Widths of Absorption Lines in Spectra of 109 Stars 05-B7

widths obtained for 05-B7 stars were used in the first place for a two-dimensional quantitative spectral classification of stars in the spectral range indicated and for the compilation of the spectrum-absolute magnitude diagram. There are 22 references.

Author's summary

Translator's note: This is the full translation of the original Russian abstract.



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S/035/59/000/003/011/039
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, No. 3,
pp. 32-33, # 1910

AUTHOR: Kopylov, I. M.

TITLE: Two-dimensional Quantitative Spectral Classification of 238 [✓]Stars
05-B7 and Compilation of the Spectrum-Absolute Magnitude Diagram

PERIODICAL: Izv. Krymsk. astrofiz. observ., 1958, Vol. 20, pp. 156-207
(English summary)

TEXT: On the basis of the catalogue of equivalent widths of the selected
absorption lines in the spectra of 238 stars of spectral classes 05-B7, classi-
fication criteria were elaborated based on two parameters: spectral class and
absolute magnitude. The MK system (Morgan, Keenan) was adopted as a starting
(standard) system of spectral classes. Absolute magnitudes of standard stars
were determined according to space groups of different kind to which the stars
belong. From one to 20 criteria (ratios of absorption lines combinations selected
in a special way) for each star were used for determining spectral classes. ✓

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S/035/59/000/003/011/039
A001/A001Two-Dimensional Quantitative Spectral Classification of 238 Stars 05-B7 and
Compilation of the Spectrum-Absolute Magnitude Diagram

The probable error of determining the spectral class of a star was on an average ± 0.14 and ± 0.28 of one spectral subclass, for stars earlier and later than B3 spectral class, respectively. For determining absolute magnitudes were used from one to 15 criteria, i. e., specially selected combinations of absorption lines. The mean probable error in determining the absolute magnitude for all stars is equal to $\pm 0^m.10$, only for 5% of stars the error is greater than $\pm 0^m.25$. The spectral classes and absolute magnitudes of 05-B7 stars were compared with the systems of other authors, in particular with the system of absolute magnitudes of Petri and (D, λ -3700) system of Chalonge and Divan. A spectrum - absolute magnitude diagram was plotted. The main features of the diagram: two broad bands (sequences) one of which was formed by stars of III-V magnitude classes, and the second one by supergiants Ia-Ib. The width of these bands is rather considerable, from 2^m to 3^m . In the region of spectral subclasses 09-B1 the bands partially overlap one another. The author presumes that the band of supergiants Ia-Ib (absolute magnitude from $-5^m.5$ to $-7^m.5$) begins from spectral classes not earlier than 09, and 05-08 stars are a continuation of the stellar

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AUTHOR: Kopylov, I.M. 33-35-3-9/27

TITLE: On the Question Concerning the Spatial Distribution of Groups of Hot Stars (K voprosu o prostranstvennom raspredelenii gruppirovok goryachikh zvezd)

PERIODICAL: Astronomicheskii zhurnal, 1958, Vol 35, Nr 3, pp 390-407 (USSR)

ABSTRACT: The present paper consists of 5 paragraphs

§ 1. The aim of the paper, the subject and the method. The problem of a rational selection of the visual limits of crowdings of hot stars is considered. 54 visual crowdings have been picked out, which in relation to their visual limits and number of stars, occupy an intermediate position between aggregates [Ref 4] and associations [Ref 17].

§ 2. Representation of the results. The distribution of stars according to the distance modulus, within the limits of each visual crowding, has been studied. It is established without a doubt that most of the visual crowdings of hot stars in the sky (33 out of 54) are composed of 2 - 5 spatial groups, which are at different distances from the sun. A criterion for a non-accidental selection of such separate space groups in a given direction has been established. A quantitative criterion,

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SECRET

On the Question Concerning the Spatial Distribution
of Groups of Hot Stars

33-35-3-9/27

a conditional "degree of reliability" of each group, which is satisfied by 102 of the 114 groups selected, i.e. about 90%, has been found.

§ 3. On the spiral structure of the Galaxy. The space distribution of these groups in the Galaxy has been considered. The groups of hot stars form the spiral structure of the Galaxy. Three spiral arms, the positions of which are in good qualitative agreement with the conclusions of most of the recent works, dealing with this problem, have been revealed. The spirals are trailing.

§ 4. On the existence of groups of hot stars and on the motion in these groups. A very important peculiarity in the distribution of groups of hot stars has been found - a tendency to form complexes, often very elongated up to about several hundred parsecs.

The analogy in form and size of the crowdings of hot supergiants and dust formations in the Galaxy (found and studied for M33 by B. Vorontsov-Velyaminov [Ref 39,40]), and the systems of emission nebulae of various size (G.A.Shaya [Ref 41]) is confirmed.

In connection with the results of §§ 2 and 4 several remarks are made on the necessity of a more strict approach to the

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On the Question Concerning the Spatial Distribution
of Groups of Hot Stars

33-35-3-9/27

analysis of relative motions of stars in the visual groups.
Stars having the same distance should be selected before any
analysis of motion is made.

A preliminary analysis of the proper motions in the associations
Lac and Cep II has been made from this point of view. The re-
sults of investigations [Ref 34 - 36] on the character of the
motions of stars in associations have been confirmed.

§ 5. Concluding remarks. The conclusion that there is a radial
expansion of stars in associations from an initial small
volume and the hypothesis, on which this conclusion to a great
extent depends (the mechanism of formation of groups of hot
stars and the forms of existence of prestellar matter as super-
dense protostars - in the sense of Ambartsumyan [Ref 44, 45]),
needs further confirmation.

Along with this, the idea of the formation of stars directly
from diffuse matter by its condensation under certain conditions
[Ref 40, 46, 47] receives another confirmation: in particular in
the fact of a similarity of form, size, masses and space
distribution of the observed types of groups of hot stars, on
the one hand, and the system of irregular forms of diffuse
matter (dark and emission nebulae), on the other, in our

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On the Question Concerning the Spatial Distribution
of Groups of Hot Stars

33-35-3-9/27

Galaxy as well as in other stellar systems [Ref 40,41] .

There are 1 table, 3 figures, and 47 references, 27 of which
are Soviet, 18 American, and 2 Dutch.

ASSOCIATION: Krymskaya astrofizicheskaya observatoriya Akademii nauk SSSR
(Crimean Astrophysical Observatory of the Academy of Sciences
of the USSR)

SUBMITTED: July 9, 1957

Card 4/4

3(1)

AUTHORS: Boyarchuk, A.A., and ~~Kopylov~~, I.M.

SOV/33-35-5-17/20

TITLE: On the Distribution of Stellar Rotational Velocities (O raspredelenii skorostey vrashcheniya zvezd)

PERIODICAL: Astronomicheskii zhurnal, 1958, Vol 35, Nr 5, pp 804-810 (USSR)

ABSTRACT: Basing on data given in the papers [Ref 1-9] (table 1) the authors establish a catalogue of the rotational velocities of 2362 stars. They determine the mean rotational velocity $\bar{v} \sin i$ as a function of the spectral class for each luminosity class (fig. 1, 2). These functions have several maxima and minima which can not be explained with the aid of the known hypothesis on stellar evolution. A detailed representation of the results will be published in "Izvestiya Krymskoy astrofizicheskoy observatorii" Vol 21.

There are 3 figures, 2 tables, and 15 references, 3 of which are Soviet, 11 American, and 1 Canadian.

ASSOCIATION: Krymskaya astrofizicheskaya observatoriya Akademii nauk SSSR
(Krym Astrophysical Observatory of the AS USSR)

SUBMITTED: February 15, 1958

Card 1/1

KOPYLOV, I. M.: Master Phys-Math Sci (diss) -- "Dimetric quantitative spectral classification of 238 stars 05-B7 and the construction of a diagram of spectrum-absolute magnitudes". Leningrad, 1959. 13 pp (Acad Sci USSR, Main Astron Observatory), 175 copies (KL, No 13, 1959, 99)

KOPYLOV, I.M., BOYARCHUK, A.A

Relationship between the speed of the rotation of stars and their
spectral class and luminosity [with summary in English]. Izv.krym.
astrofiz.obser. 21:40-53 '59. (MIRA 13:6)
(Stars)

23700

S/035/61/000/004/031/058
A001/A101

3,1560

AUTHOR: Kopylov, I.M.

TITLE: The sequence of stars of β Canis Majoris type

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 4, 1961, 40, abstract 4A375 ("Izv. Krymsk. astrofiz. observ.", 1959, v. 21, 71-83, Engl. summary)

TEXT: The period-absolute magnitude and period-spectrum relations are plotted for the known stars of β Canis Majoris type. In most cases the author's two-dimensional quantitative spectral classification was used. The period-absolute magnitude relation reveals a break point and is represented by expressions:

$$I M_V = -17.13 - 17.20 \lg P,$$

$$II M_V = -7.96 - 5.16 \lg P.$$

The coefficients at $\lg P$ differ from the theoretical value, -10.2, which should be expected if the energy source of these stars were the carbon cycle and opacity were caused by electronic scattering. The period-spectrum relation looks as follows: $Sp = -2.40 - 5.57 \lg P$, if B0 is adopted for 0, B1 for 1, etc. Both of relations

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S/035/61/000/006/007/044
A001/A101

3.1560

AUTHOR: Kopylov, I.M.

TITLE: Equivalent widths of absorption lines in spectra of 62 stars of B8-F2 classes

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 6, 1961, 16, abstract 6A163 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 22, 189 - 206, Engl. summary)

TEXT: This is a continuation of studies on determining equivalent widths of the most intense absorption lines in spectra of stars of early spectral classes and on development of a method for two-dimensional quantitative spectral classification of these stars. Equivalent widths of the most intense absorption lines in the region of $\lambda\lambda 3670 - 4924$ were determined for 62 stars of spectral classes B8 - F2. Observational data were obtained in 1953 - 1956 with the 50" reflector of the Crimean Astrophysical Observatory. Dispersion of spectrograms was 75 Å/mm. The total number of processed spectrograms was 480 (eight spectrograms, on an aver-

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Equivalent widths ...

S/035/61/000/006/007/044
A001/A101

age, for each star). The author presents the tables of equivalent widths W_{λ} of absorption lines and compares them with the results of other authors. There are 11 references.

V. Popov

[Abstracter's note: Complete translation]

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KOPYLOV, I.M.

The spectrum-absolute magnitude diagram and some problems in the
evolution of hot stars. Vop.kosm. 7:258-298 '60. (MIRA 13:11)
(Stars)

KOPYLOV, I.M.

The equivalent widths of absorption lines in spectra of the 62
stars of B8-F2 classes. ¹zv.Krym.astrofiz.obser. 22:189-206
'60. (MIRA 13:7)
(Stars--Spectra)

KOPYLOV, I.M.

Two-dimensional quantitative spectral classification of B6-F2 stars.
Izv.Krym.astrofiz.obser. 23:148-173 '60. (MIRA 13:10)
(Stars--Classification)

S/035/62/000/007/024/083
A001/A101

AUTHORS: Mustel', E. R., Kopylov, I. M., Galkin, L. S., Kumaygorodskaya, R.N.,
Bartash, T. M.

TITLE: Spectrophotometric study of Nova Herculis 1960. I.

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 31,
abstract 7A236 ("Izv. Krymsk. astrofiz. observ.", 1961, v. 26,
181 - 216; English summary)

TEXT: About 120 spectrograms of Nova Herculis and ζ Aql taken as a standard
were taken in March - April 1960 with the 122-cm reflector of the Crimean
Astrophysical Observatory, mainly with a quartz spectrograph with dispersion of
155 Å/mm at H γ . The following quantities were determined: equivalent widths
 W_λ and values of $\Delta\lambda$ (km/sec) for emission hydrogen lines H β -H α , as well as central
intensities I_0 with respect to continuous spectrum for all identified emission
lines in the spectrum of N Her. Changes of these characteristics of emission
lines in the course of time were generally analyzed. The average speed of enve-
lope expansion was estimated (1,850 km/sec) from the width of hydrogen lines. ✓

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BOYARCHUK, A.A.; GERSHBERG, R.Ye.; GOLLANDSKIY, O.P.; KOPYLOV, I.M.;
NIKONOV, V.B.

"Vistas in astronomy". Reviewed by A.A.Boiarchuk and others.
Astron.sbur. 38 no.4:777-782 J1-Ag '61. (MIRA 14:8)

1. Krymskaya astrofizicheskaya observatoriya AN SSSR.
(Astronomy)

3.1260

AUTHORS:

Butslov, M.M., Kopylov, I.M., Nikonov, V.B.,
Severnyy, A.B. and Chuvayev, K.K.

TITLE:

Experiments in electron-optical photography of
galaxies in hydrogen light using the 2.6 m
reflector of the Crimean Astrophysical Observatory

PERIODICAL:

Astronomicheskii zhurnal, 4. 39, no. 2, 1962,
515 - 322 + 3 plates

TEXT:

Detailed studies of extragalactic nebulae require
the use of large telescopes. As regards detecting apparatus,
the use of ordinary photographic techniques in conjunction with
narrow-band filters necessitates long exposures and is therefore
inconvenient in practice. The authors have investigated
therefore the possibilities of image-converters as a means of
avoiding these disadvantages. An image-converter was set up
in the direct focus of the 2.6 m reflector of the Crimean
Astrophysical Observatory. The immediate object was to investi-
gate the hydrogen emission in a number of galaxies. Four light
colour filters were introduced in front of the converter and
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APPROVED FOR

Experiments in electron-optical ...

S/035/62/039/002/011/014
E032/E314

the screen of the latter was photographed by a motion-picture camera. Altogether 58 galaxies were photographed in H_{α} and other light. Photographs of 10 of these are reproduced and their features are described (NGC 604, 1569, 4214, 4449, 4490, 4736, 5194, 5457, 6822 and 6946). Many unknown clouds of hydrogen-emission were detected in the galaxies. In many cases there is no correspondence between hot-star clusters and hydrogen clouds. The hydrogen component shows greater concentration in the equatorial planes than the stellar component. In some galaxies the nuclei consist of isolated condensations. The dimensions of the nuclei in H_{α} light are in some cases appreciably larger than in other light, although in a number of cases the reverse situation obtains. In several galaxies, streams or ejections from the nucleus, which are visible only in H_{α} light, were detected.

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Experiments in electron-optical... S/033/62/039/002/011/014
E032/E314

ASSOCIATION: Krymskaya astrofizicheskaya observatoriya
Akademii nauk SSSR (Crimean Astrophysical
Observatory of the Academy of Sciences, USSR)

SUBMITTED: December 31, 1961

Card 3/3

S/712/62/028/000/001/020
E032/E514

AUTHORS: Gollandskiy, O.P. and Kopylov, I.M.

TITLE: Quantitative analysis of the atmospheres of hot supergiants. II. Determination of the temperatures and turbulent velocities in the atmospheres of nine O9.5-B5 supergiants.

SOURCE: Akademiya nauk SSSR. Krymskaya astrofizicheskaya observatoriya. Izvestiya. v.28. 1962, 3-34

TEXT: This is a continuation of work reported by E. A. Vitrichenko and I. M. Kopylov (Izv. Krymskoy astrofiz. obs., 27, 241, 1962) who analyzed the data for eight B8-A0 supergiants.. In the present work the curve-of-growth method was used to investigate the physical conditions in the atmospheres of nine O9.5-B5 supergiants.. The analysis was based on some 60 spectrograms obtained largely in 1958-1959 with a single-prism spectrograph working in conjunction with the 122 cm reflector of the Krymskaya observatoriya (Crimean Observatory) having a dispersion of 23.4 Å/mm at H_γ. Spectra were obtained for the following stars: α Cam, ζ Ori, ε Ori, × Cas, ρ Leo, ζ Per, P Cyg, χ² Ori, Card 1/4

Quantitative analysis of the ...

S/712/62/028/000/001/020
E032/E514

55 Cyg and 67 Oph. A detailed numerical list is given of the recorded lines, their identifications, equivalent half-widths and other parameters. It is estimated that for the majority of lines the equivalent widths were determined to an accuracy of about 10%. Fig.3 shows the dependence of the turbulent velocity on the spectral class. In this figure the stars refer to velocities obtained from line profiles (macro-turbulence), the open circles represent values obtained from the curves of growth for the HeI triplets (upper circles) and HeI singlets (lower circles), and the points represent values obtained from the curves of growth for OII and other lines. It is found that $v_t(2^3P)$ for all stars except ϵ Ori is greater than $v_t(2^1P)$ and the ratio of these two velocities increases from 1.30 to 1.80 between B5 and O stars. Both $v_t(2^3P)$ and $v_t(2^1P)$ increase by a factor of 2.5-3.0 between B5 and O stars. There is a reduction in v_t between O9.9 and α Cam (O9.4) stars. An analysis of the observational data indicates that the population of the 2^3P level of helium is much lower than the population of 2^1P level and decreases between O and B3 stars, although an increase was expected in this region. A comparison

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Quantitative analysis of the ...

S/718/62/028/000/001/020
E032/E514

is given between the excitation temperatures found largely from OII lines, with the ionization temperatures obtained from the combination of the Saha and Boltzmann formulas applied to lines of atoms in neighboring stages of ionization. A dependence was found between the ionization temperatures and the ionization and excitation potentials of those atoms whose lines were used to determine the temperature. This dependence is interpreted as being the consequence of a connection between the depths of the effective layers of line formation and the ionization and excitation potentials of these lines. This is confirmed by theoretical analyses of models of hot-star atmospheres. Thus, lines with higher ionization and excitation potentials arise in deeper layers of the atmosphere. There is no unique method of specifying the temperature of a star as a whole. Differences in the temperatures obtained by different methods lead to large errors in the relative chemical composition of stellar atmospheres determined by the curve-of-growth method. There are 9 figures and 9 tables.

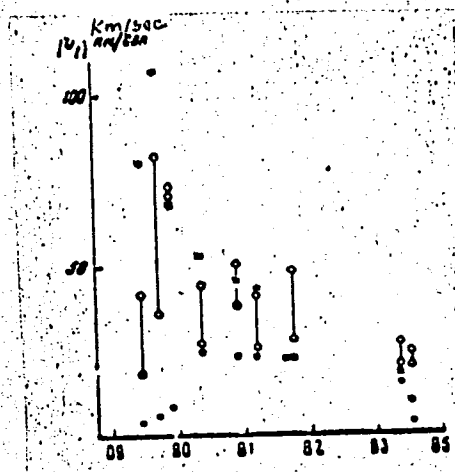
SUBMITTED: December 20, 1961

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Quantitative analysis of the ...

S/712/62/028/000/001/020
E032/E514

Fig.3



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S/712/62/028/000/002/020
E032/E114

AUTHORS: Galkina, T.S., and Kopylov, I.M.

TITLE: Quantitative analysis of the atmospheres of hot supergiants. III. A2-F2 supergiants

SOURCE: Akademiya nauk SSSR. Krymskaya astrofizicheskaya observatoriya. Izvestiya. v.28. 1962. 35-93

TEXT: 35 spectrograms of the following stars were analyzed: α Cyg (HD 197 345), γ Cep (HD 207 260), η Per (HD 14 489), δ Cas A (HD 223 385), ϕ Cas (HD 7 927), ϵ Aur (HD 31 964), δ Her (HD 163 506), γ Her (HD 164 136). They were obtained in 1958-1959 with a single-prism spectrograph (dispersion 23.4 Å/mm at $H\gamma$) and the 122 cm reflector of the Krimskaya Observatoriya (Crimean Observatory). The equivalent widths were found for a large number of lines in the range $\lambda\lambda$ 3750 - 5020 Å. The Doppler velocities were determined from the curves of growth and were assumed to be equal to the velocities of turbulent motion since thermal velocities in the atmospheres of these stars are small (1 - 2 km/sec). The turbulent velocities were then investigated as functions of the excitation potential and it was

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Quantitative analysis of the ...

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E032/E114

found that v_t decreases with increasing E.P. Moreover, it was found to increase with height in the atmospheres. This increase is more clearly defined in the more extended atmospheres of F0-F2 stars than in the atmospheres of A2-A3 stars. The dependence of v_t on height for atoms and ions was found to be different. Next, the excitation temperature was determined as a function of E.P. The variation was found to be more rapid for F0-F2 stars than for A2-A3 stars. The values of the electron density P_e and the quantity $\phi_i = 5040/T_i$ for metal lines, where T_i is the ionization temperature, were found to be as shown in Table 10. The values of $\log P_e$ for metal lines were found to be larger by an order of magnitude as compared with $\log P_e$ (hydrogen). These values were then used to estimate the chemical composition of the stars. Fig.14 shows the relative chemical composition of A2-A3 and F0-F2 stars (upper and lower curves, respectively). Further studies will require data with higher dispersion. There are 14 figures and 12 tables.

December, 1961
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Quantitative analysis of the ...

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E032/E114

Table 10

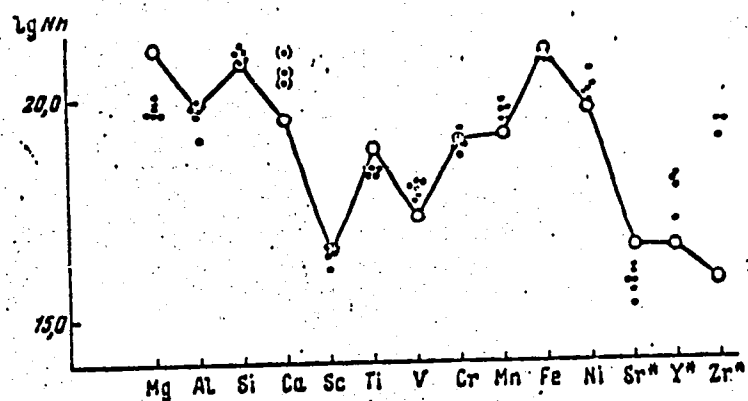
	$\log P_e$	θ_1
α Cyg	0.30	0.72
γ Cep	0.52	0.73
η Per	0.44	0.72
δ Cas A	0.54	0.74
ϕ Cas	0.70	0.73
ϵ Aur	0.66	0.74
δ Her	0.76	0.76
γ Her	0.78	0.81

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Quantitative analysis of the ...

S/712/62/028/000/002/020
EO32/E114

Fig. 14 . Relative chemical composition of A2-A3 stars

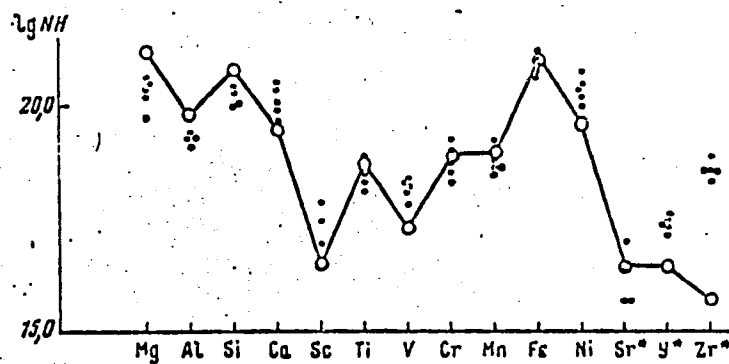


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Quantitative analysis of the ...

S/712/62/028/000/002/020
EO32/E114

Fig.14. Relative chemical composition of F0-F2 stars



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KOPYLOV, I.M.

Effective temperature scale of stars. Izv. Krym. astrofiz. obser.
30:69-89 '63. (MIRA 17:1)

KOPYLOV, I.M.; BELYAKINA, T.S.; VITRICHENKO, E.A.

Quantitative spectral classification of "Metallic" stars. Izv.
Krym. astrofiz. obser. 29:181-218 '63. (MIRA 16:10)

KOPYLOV, I.M.; KUMAYGORODSKAYA, R.N.

Spectrophotometric study of ϵ Aurigae during occultation, 1955-1957.
Izv. Kryn. astrofiz. obser. 29:251-267 '63. (MIRA 16:10)

KOPYLOV, I.M.; VITRICHENKO, E.A.; GALKINA, T.S.; GOLLANDSKIY, O.P.

Quantitative analysis of atmospheres of hot supergiants.

Part 4: Physical conditions in O-F supergiant atmospheres.

Izv. Krym. astrofiz. obser. 30:42-68 '63. (MIRA 17:1)

L 18385-65 ENG(v)/EWT(c)/EEG(t) Pa-5/Pae-2 SSD/SSD(b)/SSD(c)/AFWL/
BSD/AFETR/ESD(t) GW
ACCESSION NR: AR4040392 S/0269/64/000/005/0023/0023

SOURCE: Ref. zh. Astron. Otd. vy*p., Abs. 5.51.199

AUTHOR: Kopylov, I. M.

TITLE: A scale of effective stellar temperatures

CITED SOURCE: Izv. Kry'msk. astrofiz. observ., v. 30, 1963, 69-89

TOPIC TAGS: star, stellar temperature scale, astrophysics, main sequence star,
bolometric correction, star atmosphere model

TRANSLATION: By means of the correlation of a considerable number of published models of stellar atmospheres and a uniform spectral sequence of real stars (through analysis of the spectroscopic characteristics of the models), the author has established a new scale of effective temperatures — the dependence of T_{eff} on the spectral class for stars in the range O5-G5. As a result of identification of 26 uniform models of the internal constitution of stars with real stars lying at the lower boundary of the main sequence ("line of zero age"), the scale of effective temperatures of stars was established independently for this same range of spectral classes. Both scales are in

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L 18385-65

ACCESSION NR: AR4040392

good agreement with one another (with the exception of 05-07 stars). In the ranges of spectral classes 05-07, 09-B5 and B9-A3 the two scales differ appreciably from the scale devised by G. Kuiper. In the range A-F they agree well with the scale devised by D. Pepper (see RZhAstr. 1961, 8A155). The finally adopted scale of effective temperatures was the weighted mean T_{eff} based on both scales. A new scale of bolometric corrections Δm_{bol} has also been devised: it differs appreciably from the scale proposed by Kuiper. An attempt has been made to devise a scale of ionization temperatures and excitation temperatures for stars of the main sequence in the range of spectral classes 05-KO. T_{ion} and T_{ex} were determined by a quantitative analysis of star spectra. The inequalities $T_{\text{eff}} > T_{\text{ion}} > T_{\text{ex}}$ apply for a broad range of spectral classes. However, the ratios $T_{\text{ex}}:T_{\text{ion}}:T_{\text{eff}}$ vary within rather broad limits in dependence on the spectral class (temperature) of a star. Bibliography with 47 items. Author's summary.

SUB CODE: AA

ENCL: 00

Card 2/2

L 2012P-65 ENG(v)/LWT(1)/EEC(t)/ Pe-5/Pae-2/ AELC(a)/SSD/SSD(c)/ESD/SSD(b)/
AFWL/ASD(f)-3/ASD(p)-3/AFETR/RAEM(c)/ESD(gs)/ESD(t)/RAEM(a)/ GK

ACCESSION NR: AT4049112

S/2555/64/010/000/0074/0106

AUTHOR: Kopylov, I. M.

TITLE: Turbulent movements in stellar atmospheres

SOURCE: AN SSSR. Astronomicheskiiy sovet. Voprosy* kosmogonii, v. 10, 1964,
Problemy* magnitnoy gidrodinamiki i kosmicheskoy gazodinamiki (Problems in magne-
tic hydrodynamics and cosmic gas dynamics), 74-106

TOPIC TAGS: stellar atmosphere, astrophysics, star luminosity, star spectral class,
solar atmosphere, cosmic gas dynamics, magnetohydrodynamics

ABSTRACT: The author presents a review of the observational and theoretical as-
pects of the problem of turbulent movements in stellar atmospheres. The paper is
divided into 11 sections. #1. Introductory remarks; #2. Methods for determining
turbulent velocities in stellar atmospheres; #3. General information on the prin-
cipal parameters of stellar atmospheres; #4. Dependence of v_t (microturbulent
velocities) on optical depth in a stellar atmosphere; #5. Dependence of v_t (mean
microturbulent velocities) on the luminosity and spectral class of stars; #6. De-
pendence of macroturbulent movements on luminosity and spectral class; #7. Basic
information on the fields of velocities in the outer layers of the solar atmos-
phere; #8. General interpretation of observations of microturbulent movements in

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stellar atmospheres; #9. Physical interpretation of turbulent movements in stellar atmospheres; #10. Some of the most important problems in the investigation of turbulent velocities in stellar atmospheres; #11. Most important literature on turbulent movements in stellar atmospheres. The author notes the following specific problems of an observational character worthy of attention. 1. Study of the dependence of v_t on optical depth in the atmosphere for different types of stars for the greatest possible range τ . 2. Use of spectral line profiles to study the dependence of V_t on optical depth in the atmosphere for a number of supergiants of very different spectral classes. 3. Investigation of differential systematic shifts of the lines of different atoms and ions developing at different depths in the nonstable atmospheres of high-luminosity stars. 4. Investigation of the character of the irregular fluctuations of stellar radial velocities for the purpose of studying those large-scale chaotic atmospheric movements whose dimensionality is comparable to the dimensions of the star itself. The following problems of a theoretical character warrant study. 1. Derivation and detailed analysis of a series of photospheric models of different types of stars. 2. Further investigation of the influence of rapid axial rotation of stars and the resulting meridional circulation on the manifestation of turbulence in the He II ionization zone. 3. Further study of the characteristics of transmission and dissipation of the hydromagnetic waves created by the convective zone through a medium with variable temperature and density (through the stellar atmosphere).

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4. Estimation of the energy of hydromagnetic waves in comparison with the total radiation energy of stars. Orig. art. has: 7 formulas, 15 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: AA, ME

NO REF SOV: 001

OTHER: 007

Card 3/3

BOYARCHUK, A.A.; KOPYLOV, I.M.

General catalog of rotational velocities of 2558 stars. Izv.
Krym. astrofiz. obser. 31:44-99 '64. (MIRA 17:9)

KOPYLOV, I.M.

Turbulent motions in stellar atmospheres. Vop. kosm. 10:74-106 '64.
(MIRA 17:10)

L 00773-67 EWT(1) GW

ACC NR: AR6004665

SOURCE CODE: UR/0269/65/000/010/0026/0026

AUTHOR: Kopylov, I. M.

TITLE: Evolutionary interpretation of the spectrum-luminosity diagram for hot stars.
2. Period-luminosity dependence and masses of long period Cepheids

SOURCE: Ref. zh. Astronomiya, Abs. 10.51.221

REF SOURCE: Izv. Krymsk. astrofiz. observ., v. 33, 1965, 286-300

TOPIC TAGS: variable star, hot star, star cluster, stellar evolution

ABSTRACT: Using Cepheids belonging to an open cluster, with the known distance model the absolute magnitude of the Cepheids can be reliably determined. The distances to clusters were determined by comparing the color-magnitude diagram corrected for interstellar absorption with the "initial main sequence" proposed earlier by the author. The absolute magnitudes of 9 (out of 15) Cepheids were determined by this method. The obtained results are presented in a table. The period-luminosity dependence and the spectrum-absolute magnitude diagram are presented for the Cepheids. The statistics of long-period Cepheids were used on the basis of OKPZ (1958) and the first supplement to OKPZ. It is assumed that long-period Cepheids were formed from stars of the main sequence. The masses of Cepheids (3--11 solar masses), the spectral class interval of the parent stars on the main sequence (B1.0 - B6.5), and

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UDC: 523.800

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the masses of Cepheids (for 15 stars presented in the table) are estimated under certain assumptions about the evolutionary tracks. The "optimal" mass of long-period Cepheids is 3.5—5.5 solar masses. Bibliography of 27 citations. B. Fesenko
[Translation of abstract]

SUB CODE: 03

2. 1/10

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109-575-000